

Serial No. 09/679,297  
Amdt. dated March 9, 2004  
Reply to Office Action of October 23, 2003

Docket No. QSI-001

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1. (Currently Amended) A system for analyzing and monitoring internet traffic, comprising:

a relational database; and

a log engine that processes log files received from at least one internet server and stores data processed from the log files in the relational database; ~~and~~

~~a report engine that generates reports based on the processed data stored in the relational database~~

wherein the log engine, when new log file data is present in the log file, processes said new log file data and determines an "end of file" location on the log file, and, when new log file data is not present in the log file, periodically checks the log file at predetermined time intervals to check for new log file data, and commences processing of any new log file data at a most recent determined "end of file" location on the log file.

B1 2. (Original) The system of claim 1, wherein the relational database comprises a plurality of hash tables.

3. (Original) The system of claim 1, wherein the plurality of tables comprise:  
a visitor table that stores traffic information generated by a visitor to an internet site hosted by the at least one internet server; and  
a plurality of data tables, wherein each data table stores records related to a respective parameter.

4. (Original) The system of claim 3, wherein the visitor table comprises at least one pointer to at least one record stored in at least one of the data tables.

5. (Original) The system of claim 3, wherein the respective parameters comprise:  
domain names from which the visitor originated; and  
web browsers used by the visitor; and  
other internet sites that referred the visitor to the internet site.

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6. (Currently Amended) A system for analyzing and monitoring internet traffic generated by visitors to at least one internet site hosted by at least one internet server, comprising:

a visitor centric database; and

a log engine that receives log files from the at least one internet server, processes hits logged in each log file, and stores traffic data derived from the hits in the visitor centric database, wherein the visitor centric database associates the traffic data derived from the hits with a visitor that generated the hit; ~~and~~

~~a report engine that generates reports using the traffic data stored in the visitor centric database~~

wherein the log engine, when new log file data is present in the log file, processes said new log file data and determines an "end of file" location on the log file, and, when new log file data is not present in the log file, periodically checks the log file at predetermined time intervals to check for new log file data, and commences processing of any new log file data at a most recent determined "end of file" location.

7. (Original) The system of claim 6, wherein the visitor centric database comprises a plurality of hash tables.

8. (Original) The system of claim 6, wherein the plurality of hash tables comprise:

B1 a visitor table that stores traffic information derived from the hits, wherein the visitor table contains a unique visitor record for each visitor; and

a plurality of data tables, wherein each data table stores data related to a respective non-unique parameter.

9. (Original) The system of claim 8, wherein the visitor table comprises at least one pointer to at least one record stored in at least one of the data tables.

10. (Original) The system of claim 8, wherein the respective non-unique parameters comprise:

domain names from which the visitors originated;

web browsers used by the visitors; and

other internet sites that referred the visitors to the at least one internet site.

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11. (Original) The system of claim 6, wherein the log engine comprises a database buffer that temporarily stores the traffic data derived from the hits logged in the log files.

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12. (Original) The system of claim 11, wherein the log engine further comprises a database updater that transfers the traffic data temporarily stored in the database buffer to the visitor centric database.

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13. (Original) The system of claim 12, wherein the database updater sorts the traffic data temporarily stored in the database buffer before transferring the traffic data to the visitor centric database.

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14. (Original) The system of claim 6, wherein the log engine comprises a log parser that reads log lines in the log files, and separates each log file into individual fields.

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15. (Currently Amended) The system of claim 14 6, further comprising a report engine that generates reports using the traffic data stored in the visitor centric database wherein the log parser is adapted to process the log lines in real time as each hit is logged to a log file.

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16. (Original) The system of claim 6, wherein the log engine is configured to process hits from multiple internet sites that are logged to a single log file.

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(Original) The system of claim 6, wherein the log engine comprises a website identifier that identifies a source of each hit.

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(Original) The system of claim 8, wherein the log engine comprises a visitor identifier that determines if a hit originates from a new visitor or an existing visitor.

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(Original) The system of claim 18, wherein the visitor identifier is adapted to create a new visitor record if a hit originates from a new visitor.

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(Original) The system of claim 6, wherein the log engine comprises a domain name system (DNS) resolver that determines host and domain information for each visitor.

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(Original) The system of claim 20, wherein the DNS resolver utilizes reverse DNS resolution to determine the host and domain information for each visitor.

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(Original) The system of claim 6, wherein the log engine is adapted to process e-commerce log files that contain information on money spent by a visitor.

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<sup>18</sup>  
~~23.~~ (Currently Amended) The system of claim <sup>17</sup>~~22~~ ~~15~~, wherein the report engine is adapted to generate reports that correlate money spent by a visitor to any other parameter of the traffic data.

<sup>19</sup>  
~~24.~~ (Currently Amended) The system of claim <sup>17</sup>~~22~~ ~~15~~, wherein the report engine is adapted to generate a top products report that ranks products purchased by visitors based on revenues generated by the products.

<sup>20</sup>  
~~25.~~ (Currently Amended) The system of claim <sup>17</sup>~~22~~ ~~15~~, wherein the report engine is adapted to generate at least one of a totals report, product tree report, regions report, and top scores report.

<sup>21</sup>  
~~26.~~ (Currently Amended) The system of claim <sup>17</sup>~~6~~ ~~15~~, wherein the report engine is adapted to generate a report that displays a value of at least one traffic data parameter over at least one predetermined time period.

<sup>22</sup>  
~~27.~~ (Original) The system of claim <sup>21</sup>~~26~~, wherein the report comprises a snapshot report in which the at least one predetermined time period comprises seven consecutive 24 hour time periods.

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<sup>23</sup>  
~~28.~~ (Original) The system of claim <sup>21</sup>~~26~~, wherein the report comprises an hourly graph report in which the at least one predetermined time period comprises a plurality of consecutive one hour time periods.

<sup>24</sup>  
~~29.~~ (Currently Amended) The system of claim 6 <sup>17</sup>~~18~~, wherein the report engine is adapted to generate a top pages report that ranks website pages based on number of visitors to the website pages.

<sup>25</sup>  
~~30.~~ (Original) The system of claim <sup>24</sup>~~29~~, wherein each entry in the top pages report comprises a link for accessing additional information about a respective website page.

<sup>26</sup>  
~~31.~~ (Currently Amended) The system of claim 6 <sup>17</sup>~~18~~, wherein the report engine is adapted to generate a search engine report that displays a list of most used search engines.

<sup>27</sup>  
~~32.~~ (Currently Amended) The system of claim 6 <sup>17</sup>~~18~~, wherein the report engine is adapted to generate a top domains report that displays regional and network information about the visitors.



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(Currently Amended) The system of claim 6 <sup>17</sup>~~18~~, wherein the report engine is adapted to generate a browser tree report that ranks internet browsers based on which internet browsers are used most by visitors to a website.

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(Original) The system of claim <sup>28</sup>~~35~~, wherein each internet browser entry in the browser tree report includes a link for accessing information about different versions of a respective internet browser.

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(Currently Amended) The system of claim 6 <sup>17</sup>~~18~~, wherein the report engine is adapted to generate a top entrances report that ranks starting points of visitors to a website based most used starting points.

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(Currently Amended) The system of claim 6 <sup>17</sup>~~18~~, wherein the report engine is adapted to generate at least one of a summary report, a daily graph report, a monthly graph report, a top servers report, a file types report, a status/errors report, a posted forms report, a top referrals report, a top keywords report, a referral tree report, a domain tree report, a top countries report, a platform tree report, a top combos report, a top exits report, a click through report, a depth of visit report, a length of visit report, and a usernames report.

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B.1 <sup>32</sup>  
~~37~~. (Currently Amended) The system of claim <sup>17</sup>~~6~~~~15~~, wherein the report engine comprises:

a template module that stores report templates;

a session parser that receives report requests from the at least one server, and determines a type of report requested, data needed to generate a requested report and a format for the requested report;

an authenticator that receives an identity of a report requester from the session parser, and verifies that the report requester has permission to view a requested report;

a data query module that receives authentication information from the authenticator, and that queries the database for data needed to generate the requested report if the report requester has permission to view the requested report; and

a format output module that receives the data needed to generate the requested report from the database, retrieves templates for the requested report from the template module, creates the requested report, and delivers the requested report to the report requester.

<sup>33</sup>  
~~38~~. (Original) The system of claim <sup>32</sup>~~37~~, wherein the template module also stores at least one dictionary.

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39. (Original) The system of claim 38, wherein the format output module is adapted to create the requested report in a selectable language using the at least one dictionary.

40. (Currently Amended) ~~A system for analyzing and monitoring internet traffic generated by visitors to at least one internet site hosted by at least one internet server~~ An article of manufacture, comprising:

a computer usable medium having computer readable program code embodied therein for analyzing and monitoring internet traffic generated by visitors to at least one internet site hosted by at least one internet server, the computer readable program code in the article of manufacture comprising:

means computer readable program code for receiving log files from the at least one internet server;

means computer readable program code for processing hits logged in each log file by:

initiating a process loop when new data is present in the log file, during which the new data is processed and an "end of file" location is determined for use as a starting point for subsequent new data processing, and

initiating a wait loop when new data is not present in the log file, wherein the wait loop delays data processing for a predetermined time interval before checking

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for new data in the log file;

~~means~~ computer readable program code for storing traffic data derived from the hits in a database; and

~~means~~ computer readable program code for associating the traffic data derived from the hits and stored in the database with a visitor that generated the hit; and

~~means for generating reports using the associated traffic data stored in the database.~~

41. (Currently Amended) The ~~system~~ article of manufacture of claim 40, wherein the database comprises a plurality of hash tables.

42. (Currently Amended) The ~~system~~ article of manufacture of claim 41, wherein the plurality of hash tables comprise:

a visitor table that stores traffic information derived from the hits, wherein the visitor table contains a unique visitor record for each visitor; and

a plurality of data tables, wherein each data table stores data related to a respective non-unique parameter.

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43. (Currently Amended) The ~~system~~ article of manufacture of claim 42, wherein the visitor table comprises at least one pointer to at least one record stored in at least one of the data tables.

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~~44.~~ (Currently Amended) The ~~system~~ article of manufacture of claim 40, further comprising ~~buffer means~~ computer readable program code for temporarily storing the traffic data derived from the hits logged in the log files.

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45. (Currently Amended) The ~~system~~ article of manufacture of claim ~~44~~ <sup>46</sup>, wherein the ~~storing means~~ computer readable program code for storing traffic data derived from the hits in a database comprises ~~database update means~~ computer readable program code for transferring the temporarily stored traffic data ~~temporarily stored in the buffer means~~ to the database.

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46. (Currently Amended) The ~~system~~ article of manufacture of claim ~~45~~ <sup>47</sup>, wherein the ~~database update means~~ computer readable program code for transferring the temporarily stored traffic data to the database sorts the temporarily stored traffic data ~~temporarily stored in the buffer means~~ before transferring the traffic data to the database.

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~~47.~~ (Currently Amended) The ~~system~~ article of manufacture of claim 40, wherein the ~~processing means~~ computer readable program code for processing hits logged in each log file further comprises ~~log parser means~~ computer readable program code for reading log lines in the log files, and for separating each log line into individual fields.

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~~48.~~ (Currently Amended) The ~~system~~ article of manufacture of claim ~~47~~ <sup>49</sup>, further comprising computer readable program code for generating reports using the associated traffic data stored in the database wherein the log parser means processes the log lines in real time as each hit is logged to a log file.

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~~49.~~ (Currently Amended) The ~~system~~ article of manufacture of claim 40, wherein the ~~processing means~~ computer readable program code for processing hits logged in each log file processes hits originating from multiple internet sites and logged to a single log file.

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~~50.~~ (Currently Amended) The ~~system~~ article of manufacture of claim 40, wherein the ~~processing means~~ computer readable program code for processing hits logged in each log file comprises ~~website identification means that identifies~~ computer readable program code for identifying a source of each hit.

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~~51.~~ (Currently Amended) The ~~system~~ article of manufacture of claim 42, wherein the ~~processing means~~ computer readable program code for processing hits logged in each log file comprises ~~visitor identification means that determines~~ computer readable program code for determining if a hit originates from a visitor with a preexisting visitor record in the database.

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~~52.~~ (Currently Amended) The ~~system~~ article of manufacture of claim ~~51~~, wherein the ~~visitor identification means~~ computer readable program code for determining if a hit originates from a visitor with a preexisting visitor record in the database creates a new visitor record if a hit originates from a visitor without a preexisting visitor record in the database.

53. (Currently Amended) The ~~system~~ article of manufacture of claim 40, wherein the ~~processing means~~ computer readable program code for processing hits logged in each log file comprises ~~domain name system (DNS) resolver means that determines~~ computer readable program code for determining host and domain information for each visitor.

54. (Currently Amended) The ~~system~~ article of manufacture of claim 53, wherein the DNS resolver means computer readable program code for determining host and domain information for each visitor utilizes reverse DNS resolution to determine the host and domain information for each visitor.

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B1 (Currently Amended) A system for analyzing and monitoring internet traffic generated by visitors to at least one internet site hosted by at least one internet server, comprising:

a database;

a log engine that receives log files from the at least one internet server, processes hits logged in each log file, and stores traffic data extracted from the processed hits in the database, wherein the log engine comprises,

a database buffer that temporarily stores traffic data received from the database,

a log parser that processes each hit in each log file, and separates each hit into its individual fields, wherein the log parser, when new log file data is present in the log file, processes said new log file data and determines an "end of file" location on the log file, and, when new log file data is not present in the log file, periodically checks the log file at predetermined time periods to check for new log file data, and commences processing of any new log file data at a most recent determined "end of file" location.

a visitor identifier that receives each hit's individual fields from the log parser, identifies each hit as originating from either a new visitor or an existing visitor, and creates a new visitor record in the database buffer if a hit originates from a new visitor,



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a buffer updater that, prior to processing a new log file, copies previously stored data from the database to the database buffer, and wherein, for each hit, the buffer updater locates in the database buffer the visitor record identified or created by the visitor identifier for a respective hit, and updates the identified or created visitor record in the database buffer with traffic data derived from the respective hit, and

a database updater that copies updated traffic data from the database buffer to the database after all hits in the new log file have been processed; and

a report engine that generates reports using the traffic data stored in the database.

56.  
[56. (Canceled)]

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~~57.~~ (Original) The system of claim 55, wherein the log engine further comprises a website identifier that identifies a source of each hit.

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~~58.~~ (Original) The system of claim ~~57~~<sup>56</sup>, wherein the website identifier identifies the source of each hit from website identifier text received from the log parser for each hit.

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~~58.~~ (Original) The system of claim 55, wherein the log engine further comprises a domain name system (DNS) resolver that determines host and domain information for each visitor to an internet site.

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~~59.~~ (Original) The system of claim ~~59~~, wherein the DNS resolver is adapted to process multiple DNS queries in parallel.

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~~60.~~ (Original) The system of claim 55, wherein the log engine is adapted to process e-commerce log files that contain information on money spent by the visitor.

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~~61.~~ (Currently Amended) A method of analyzing and monitoring internet traffic generated by visitors to at least one internet site hosted by at least one internet server, comprising the steps of:

receiving log files from the at least one internet server;

processing hits logged in each log file, as each hit is logged to each log file, by:

(a) processing new hits present in a log file,

(b) determining an "end of file" location on the log file,

(c) waiting for a predetermined time period if no new hits are present in the

log file,

B1. (d) checking for new hits in the log file after the predetermined time period, and

(e) processing any new hits discovered in the log file by starting at the determined end of file location in the log file;

storing, in a database, traffic data derived from the hits; and

associating the traffic data derived from the hits and stored in the database with a visitor that generated the hit.

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63. (Original) The method of claim ~~62~~<sup>61</sup>, further comprising the step of generating reports using the associated traffic data stored in the database.

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64. (Original) The method of claim ~~63~~<sup>62</sup>, wherein the traffic data derived from the hits is stored in a plurality of hash tables.

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65. (Original) The method of claim ~~64~~<sup>63</sup>, wherein traffic information derived from the hits are stored in a visitor hash table that contains a unique visitor record for each visitor, and wherein data related to at least one non-unique parameter is stored in respective data tables.

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66. (Original) The method of claim <sup>64</sup>~~65~~, wherein the visitor hash table comprises at least one pointer that points to at least one record stored in at least one of the data tables.

67. (Original) The method of claim <sup>61</sup>~~62~~, further comprising the step of temporarily storing the traffic data derived from the hits in a buffer prior to storing the traffic data in the database.

68. (Original) The method of claim 67, further comprising the step of sorting the traffic data stored in the buffer prior to storing the traffic data in the database.

69. (Original) The method of claim <sup>61</sup>~~62~~, wherein the step of processing hits logged in each log file comprises the steps of:

reading log lines in the log files; and

separating each log line into individual fields.

70. (Original) The method of claim 69, wherein the hits logged in each log file are processed in real time as each hit is logged to a log file.

[ 71. (Canceled)

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(Original) The method of claim ~~62~~, further comprising the step of identifying a source from which each hit originates.

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(Original) The method of claim ~~65~~, further comprising the steps of:  
determining if a hit originates from a visitor with a preexisting visitor record in the database; and

creating a new visitor record if the hit originates from a visitor without a preexisting visitor record in the database.

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(Original) The method of claim ~~62~~, further comprising the step of determining host and domain information for each visitor.

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(Original) The method of claim ~~74~~, wherein host and domain information for each visitor is determined using reverse domain name system (DNS) resolution.

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(Currently Amended) A method of processing a log file to obtain traffic data, comprising the steps of:

copying previously stored traffic data from a database to a database buffer;

separating hits logged in the log file into individual fields, wherein each hit is

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processed as it is logged to the log file by:

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(a) processing new hits present in the log file,

(b) determining an "end of file" location in the log file,

(c) waiting for a predetermined time period if no new hits are present in the log file,

(d) checking for new hits in the log file after the predetermined time period,

(e) processing any new hits discovered in the log file by starting at the end of file location in the log file, and

(f) repeating steps (a) - (e);

identifying each hit as originating from either a new visitor or an existing visitor;

creating a new visitor record in the database buffer if a hit originates from a new visitor;

for each hit, locating the visitor record identified or created and updating the identified or created visitor record in the database buffer with traffic data derived from the respective hit; and

copying updated traffic data from the database buffer to the database after all hits in the log file have been processed.

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77. (Original) The method of claim 74, further comprising the step of generating a report based on the traffic data in the database.

78. (Canceled)

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79. (Original) The method of claim 74, wherein hits originating from multiple sources are logged to the log file.

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80. (Original) The method of claim 76, further comprising the step of identifying a source from which each hit originates.

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81. (Original) The method of claim 74, further comprising the step of determining host and domain information for each visitor.

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82. (Original) The method of claim 78, wherein host and domain information for each visitor is determined using reverse domain name system (DNS) resolution.

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